

C l a i m s

1. A breast pump with an attachment (6), which is or can be releasably applied to the opening of a container (2) and has a breast attachment element (6.1), and with a manual pump unit (3), which is releasably connected to the attachment by means of a connecting sleeve (5.3) or a connecting bore, which has a cap-shaped connecting section, as well as a pump piston (7), which can be moved back and forth in a stroke chamber (5.2) by means of an actuating handle (4), which is pivotable and provided with a retracting mechanism (8, 8'),

characterized in that

the cap-shaped connecting section and the stroke chamber (5.2) are combined in a mutual cap element (5), which is fixed on the attachment (5) by retaining means (5.1, 5.3), and

the retracting mechanism (8), one side of which acts on the actuating handle (4), is seated with the other side on the cap element (5).

2. The breast pump in accordance with claim 1,

characterized in that,

in the completely inserted state of the pump piston (7), a stroke chamber opening (5.4) on the side of the stroke chamber (5.2) facing away from the breast connection element (6.1) is

covered by an upper section (4.1) of the actuating handle (4) which, in the position of use, is located above a pivot axis.

3. The breast pump in accordance with claim 1 or 2, characterized in that

the stroke chamber (5.2) in the cap element (5) is curved in an arc-shape in accordance with a movement path of the pump piston (7), which is actuated by the upper section (4.1) of the actuating handle (4).

4. The breast pump in accordance with one of the preceding claims,

characterized in that,

with the container attached, a pivot path of the upper section (4.1) of the actuating handle (4) in the area of its connection to the pump piston (7) has been selected to be so large that, in the moved-out state, at least an upper edge section of the pump piston is outside of an upper opening edge of the stroke chamber opening (5.4).

5. The breast pump in accordance with one of the preceding claims,

characterized in that

the retracting mechanism (8) has at least one tension spring,

a suspension element (4.3) is positioned on the actuating handle (4), and a further suspension element on the cap element (5), in such a way, that with the inserted piston position, the direction of the tensile force lies above the pivot axis of the actuating handle (4), at least until, with the container (2) attached, the actuating handle (4) reaches its maximum pivot angle in the retraction direction of the pump piston (7), and

with the container (2) removed and with a further increased pivot angle the direction of the tensile force lies below the pivot axis, so that the actuating handle (4) is kept in the opened position in relation to the cap element (5).

6. The breast pump in accordance with one of claims 1 to 4, characterized in that

the retracting mechanism (8') has at least one pressure spring,

a support element (4.7) on the inside of the actuating handle (4) and a support section (5.11) at the cap element (5) are positioned in such a way that, at least with the piston rod inserted, the direction of the force of pressure lies below the pivot axis of the actuating handle (4).

7. The breast pump in accordance with claim 6,
characterized in that

the pressure spring is embodied as a spiral spring, whose front suspension lug is suspended and retained in a support section (5.11) of a free end section of the retaining element (5.1), which is oriented downward when in use, arcs upward in a U- shape in an interior chamber of the cap element (5) and the grip (6) and is supported with a free end section bent off from the suspension lug on a support element (4.7) arranged on the inside of the actuating handle (4).

8. The breast pump in accordance with one of the preceding claims,

characterized in that

an electric pump can be directly connected by means of a hose to the connecting sleeve arranged on the attachment (6) or to the connecting bore.

9. The breast pump in accordance with one of the preceding claims,

characterized in that

the connecting point between the connecting sleeve (5.3) or the connecting bore and the cap element (5) is sealed by means of conical connection or of a seal ring.

10. The breast pump in accordance with one of the preceding claims,

characterized in that

an opening is provided on the attachment (6) in the area of the connecting sleeve (5.3) or the connection bore, which can be closed by means of a stopper or, when the stopper has been removed, by hand.

11. The breast pump in accordance with one of the preceding claims,

characterized in that

the retaining means have a snap-in element (5.1) which snaps together with the attachment (6), when the cap element (5) has been coupled to the attachment (6).

12. The breast pump in accordance with claim 11,

characterized in that

the snap-in element is embodied as a snap-in tongue (5.1), which is oriented toward the container (2) with a free end section which, in the attached state, extends with a snap-in section behind an edge of the attachment (6) facing toward the container (2) when the cap element (5), located opposite the snap-in tongue (5.1), has been pushed on the connecting sleeve (5.3) or the connecting bore, which are oriented axis-parallel in relation to the container (2).

13. The breast pump in accordance with one of the preceding claims,

characterized in that

on its interior the cap element (5) has retaining flaps (5.5) or ribs on both sides, which constitute guide elements when it is placed on the attachment (6) and securing elements against twisting of the cap element (5) in relation to the attachment (6).

14. The breast pump in accordance with one of the preceding claims,

characterized in that

seating elements are arranged on both lateral sections of the cap element (5) on the one hand and, on the other hand on both lateral sections of the actuating handle (4) which, in the form of separable bearing pin/bearing eye connection, constitute the pivot axis between the actuating handle (4) and the cap element (5).

15. The breast pump in accordance with one of claims 2 to 14,

characterized in that

in the rear area remote from the breast attachment element (6.1) the cap element (5) has a rounded top which, in the pivoted-in state of the upper section (4.1) of the actuating handle (4), makes a steady transition into the also curved exterior of the

latter.

16. The breast pump in accordance with one of the preceding claims,

characterized in that

in cross section the upper section (4.1) and the lower section (4.2) are outwardly rounded on their rear facing away from the breast attachment element (6.1) and make a steady transition into each other, wherein an obtuse angle, open toward the rear, is formed between the upper section (4.1) and the lower section (4.2).

17. The breast pump in accordance with one of the preceding claims,

characterized in that

an intermediate piece is provided, which can be inserted into a V-shaped gap which, when the actuating handle (4) is pivoted, is formed in the upper area between its upper section (4.1) and the edge of the stroke chamber opening (5.4), by means of which the stroke travel of the pump piston (7) can be preset to be continuous or stepped.

18. The breast pump in accordance with one of the preceding claims,

characterized in that

spacer cams, which come into contact with the upper edge of the container (2) in the attached state, are provided on the inside of a screw connector (6.2) of the attachment (6) for connecting it with the container (6), so that an air exchange with the atmosphere is provided in the attached state.

19. The breast pump in accordance with one of the preceding claims,

characterized in that

the pump piston (7) has a piston rod (7.3) formed on it centered or eccentric, on whose backward oriented end section a releasable hinged connection with the upper section (4.1) of the actuating handle (4) is provided.

20. The breast pump in accordance with one of the preceding claims,

characterized in that

a protrusion made of a soft material is arranged on the interior, on the container side, of the lower section (4.2) of the actuating handle (4) for forming a stop between the actuating handle (4) and the container (2).

21. The breast pump in accordance with one of the preceding claims,

characterized in that

the manual pump unit (3) and the attachment (6) are arranged in such a way, and their weight is compensated, that in the empty state and with the attachment (6) placed on it and the manual pump unit attached (3), the container (2) remains upright.

22. The breast pump in accordance with one of the preceding claims,

characterized in that

a secondary air regulating unit (9), which can be operated manually from the outside, is provided on the cap element (5) for ventilating the suction chamber, which varies during the pump operation.

23. The breast pump in accordance with claim 22,

characterized in that

the secondary air regulating unit (9) is provided with a rotatable insert (9.2) and/or attachment (9.3) arranged on the exterior of the cap element (5), by means of whose rotation a flow-through conduit, which leads through a wall in the cap element (5) into the stroke chamber (5.2), is opened to a greater or lesser extent, or can be completely closed.